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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/802,349	03/16/2004	Joel F. Carpenter	BR-7283	3629

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Mr. Edgar E. Spielman, Jr.
Patent & Trademark Division
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EXAMINER

RICHARD, CHARLES R

ART UNIT	PAPER NUMBER
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1712

DATE MAILED: 11/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No.		Applicant(s)	
	10/802,349		CARPENTER, JOEL F.	
	Examiner		Art Unit	
	C. R. Richard		1712	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-37 is/are rejected.
- 7) ☒ Claim(s) 2,3,14-16,25 and 26 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>3/16/04&1/03/05</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Objections

1. Claims 2-3 and 25-26 are objected to because it is not totally clear if the expression "formed from" used in these claims is meant as open or closed. Appropriate correction is required. For purposes of examination on the merits, it will be taken that this expression is open.

Claims 14-16 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Specifically, the use of the expression "well fluid" renders these claims broader than claim 1 from which these depend where the fluid is simply a fracturing fluid. For purposes of examination on the merits, it will be taken that fracturing fluid was intended in claims 14-16.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the

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applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

(f) he did not himself invent the subject matter sought to be patented.

3. Claims 24-35 are rejected under 35 U.S.C. 102(b) as being anticipated by Moore et al. in US Patent 6,068,861.

Moore discloses a concentrated liquid composition (which may be used as a biocide) that comprises mixing (a) bromine chloride or bromine with (b) an aqueous solution of alkali metal salt of sulfamic acid (preferably the sodium salt), the solution having a pH of at least about 7, e.g., in the range of 7 to about 13.5, and preferably in the range of 7 to about 12; the amounts of (a) and (b) used are such that (i) the content of active bromine in the solution is at least 100,000 ppm (wt/wt) and (ii) the atom ratio of nitrogen to active bromine from (a) and (b) is greater than 1 when bromine is used, and greater than 0.93 when bromine chloride is used, but it is preferred, however, to utilize an atom ratio of nitrogen to active bromine from (a) and (b) that is greater than 1 even when using bromine chloride in the process (see column 2, line 64 to column 3, line 11).

The aqueous solution of alkali metal salt of sulfamic acid used in the process may be preformed by mixing together in water, (i) sulfamic acid and/or an alkali metal salt of sulfamic acid, and (ii) alkali metal base in proportions such that an aqueous solution of alkali metal salt of sulfamic acid is formed having a pH of at least 7; if sulfamic acid itself is used as the starting material, it is used initially as a slurry in water with which the alkali metal base is mixed (see column 3, line 11-19).

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Moore states that in introducing the bromine chloride or bromine into the aqueous solution of alkali metal salt of sulfamic acid, it is desirable to maintain the desired pH of the resulting solution at 7 or above by also introducing into the solution (continuously or intermittently, as desired) additional alkali metal base, such as by a co-feed of an aqueous solution of alkali metal base (see column 3, lines 20-26). The base may be sodium hydroxide (see column 4, lines 13-31).

The examples and Table 2 show active bromine levels for such compositions at up to 267,000 ppm. Examples 6 and 7 are made up using bromine chloride, sodium hydroxide, sodium sulfamate and water, have sulfamic to halogen mole ratios of 0.94 and 1.41 respectively, active bromine levels of 180,000 and 176,000 ppm respectively, and the pH is 12.5 and 12.8 respectively (see these examples and table 2). A pH of 12.8 is at least about pH 13.

Moore's compositions would of course be suitable for use in decreasing the viscosity of polysaccharide based aqueous fracturing fluids used in oil and gas wells. These compositions are strong enough oxidizers to provide some degree of viscosity reduction even at the levels usually used for biocidal activity. It is of note that Applicant's intended use in itself does not impart patentability on an otherwise old composition. *In re Pearson* 181 USPQ 641 (CCPA 1974).

4. Claims 24-34 and 36 are rejected under 35 U.S.C. 102(b) as being anticipated by Yang et al. in US Patent 6,287,473.

Yang discloses a stable oxidizing bromine composition used to prevent biofouling which includes a caustic solution comprising a halogen stabilizer, water and an alkali or alkaline earth metal hydroxide to which bromine or bromine chloride is added (see column 1, lines 10-13 and column 2, lines 14-19). A preferred halogen stabilizer is sulfamic acid (see column 2, lines 25-29), while the caustic solution may have a pH greater than 13 after the addition of bromine or bromine chloride (see column 2, lines 30-31). The bromine or bromine chloride may be in a molar amount approximately equal to the molar amount of halogen stabilizer (see column 2, lines 32-37). Sulfamate may be used as the bromine stabilizer, and a base in an amount sufficient to raise the pH of the solution to a level greater than 13 may be used (see column 2, lines 52-54). A solid version of this stable oxidizing bromine compound is disclosed (see column 2, line 65-67).

Example 1 discloses a material that may be made from bromine or bromine chloride, and a solution of an alkali or alkaline earth metal sulfamate, water and excess alkali or alkaline earth metal hydroxide (like NaOH) is added (pH 13-14); the molar ratio of sulfamate to bromine or bromine chloride is 1:1. Bromine content was 162,000 ppm. Example 2 shows a material like that of example 1 (nitrogen to bromine ratio about 1; pH 13) that is left to stand overnight, filtered and dehydrated to yield solids.

Yang's compositions would of course be suitable for use in decreasing the viscosity of polysaccharide based aqueous fracturing fluids used in oil and gas wells. It is of note that Applicant's intended use in itself does not impart patentability on an otherwise old composition. *In re Pearson* 181 USPQ 641 (CCPA 1974).

5. Claims 24-34 are rejected under 35 U.S.C. 102(b) as being anticipated by McKinnie et al. in US Patent 6,506,418.

McKinnie discloses a concentrated liquid composition made by mixing one or more of BrCl, Br₂ and Cl₂ into water containing sulfamate anions with the bromine to chlorine atomic ratio of between 0.7:1 to 1.7 to 1, along with enough alkali metal base to keep the pH between 7-11 during mixing (see Abstract). The amounts used are such that the active bromine content of the product is at least 50,000 ppm and the (sulfamate) nitrogen to bromine ratio is at least 0.93 (see Abstract). The sulfamate may be the sodium salt and the base may be sodium hydroxide (see column 4, lines 25-40). The active bromine in the product may be at least 100,000 ppm or 120,000 ppm and the nitrogen to bromine ratio may be greater than 1 (see column 4, lines 40-60). The final pH may be 12, 13 or 13.5 (see column 5, lines 35-42).

McKinnie's compositions would of course be suitable for use in decreasing the viscosity of polysaccharide based aqueous fracturing fluids used in oil and gas wells. It is of note that Applicant's intended use in itself does not impart patentability on an otherwise old composition. *In re Pearson* 181 USPQ 641 (CCPA 1974).

6. Claims 24-33 and 36 are rejected under 35 U.S.C. 102(a) and 102(e) as being anticipated by Nalepa et al. in US Patent Application Publication 2004/0022874.

Nalepa discloses a concentrated liquid composition of active bromine formed from bromine, bromine chloride or a mixture of these, as well as an alkali metal salt of

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sulfamic acid, alkali metal base and water (see claim 21). The pH is at least 7, the active bromine is above 160,000 ppm and the nitrogen:bromine ratio is greater than 1 or 0.93 depending on what bromine source is used (see claim 21). The pH may also be up to 14 and the alkali metal of the salt and base may be sodium or potassium (see claims 22-25).

As to the claim 36, claim 26 of the reference teaches all of its limitations which will not be repeated here. Claim 27 of Nalepa states that the pH may be as high as 13.5 in a composition otherwise as called out in claim 26 of Nalepa.

Nalepa's compositions would of course be suitable for use in decreasing the viscosity of polysaccharide based aqueous fracturing fluids used in oil and gas wells. It is of note that Applicant's intended use in itself does not impart patentability on an otherwise old composition. *In re Pearson* 181 USPQ 641 (CCPA 1974).

7. Claims 24-35 are rejected under 35 U.S.C. 102(f) because the Applicant did not invent the claimed subject matter.

It has been shown in the rejection under 35 USC 102(b) above over Moore in US Patent 6,068,861 (filing date June 1, 1998; issued May 30, 2000) that the rather complex/detailed compositions of the rejected claims are not new and were invented long before the filing of the present application (March 16, 2004) – see the claims of Moore also. The assignee in Moore is the same company as listed on the correspondence address of the present application, Albemarle Corporation; there is presently no assignment recorded in the current application, but it appears that there

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will eventually be one to Albemarle. The same attorney, EE Spielman, is involved in both cases. A survey of many related Albemarle patents shows that Applicant has at least collaborated with associates of Moore in related contexts. From this, it is reasonable to conclude that Applicant actually derived the subject matter of the rejected claims from another and hence did not invent it. This is in no way an accusation of impropriety on Applicant's part; the situation may simply have occurred because Applicant was not aware of the principle set forth in the *Pearson* case as explained above or for some equally innocent reason.

8. Claim 36 is rejected under 35 U.S.C. 102(f) because the Applicant did not invent the claimed subject matter.

This claim rejection is based on claim 26 of US Patent Application Publication 2004/0022874 by Nalepa et al. that was discussed above using reasoning as in the corresponding rejection of claims 24-35 under 102(f) given previously.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. Claims 1-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yang et al. in US Patent 6,287,473 in view of Borchardt in US Patent 4,524,003, Moore et al. in US Patent 6,068,861 and Murphey et al. in US Patent 6,143,698.

Yang has been discussed in detail above. Yang teaches all of the limitations of the rejected claims in the proper context, except for a specific teaching of the contact with fracturing fluids and the limitations as to the fracturing fluids in rejected claims 1-23 and 37, as well as the exact nitrogen:bromine ratio in claims 12, 23 and 35.

Yang does teach contact with oil field waters to prevent biofouling (see column 3, lines 22-25). This would have suggested to one of ordinary skill in the art to contact the fluids of Yang with well fluids, including fracturing fluids, for biofouling prevention as these are closely related contexts.

Further, it is notoriously well known in the art that fracturing fluids are commonly aqueous, polysaccharide-based gels and that xanthan or guar gums are often chosen as the polysaccharide; it is also equally well known to employ biocides of various types in such fluids to prevent undesired bacterial degradation. Borchardt is an example of

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prior art illustrating these points (see column 2, lines 55-60; column 6, lines 1-2; and claims 9 & 13-15). Note that the teaching of biocide in Borchardt is general and not limited to any specific type.

It is also notoriously well known that oxidizing agents are often used as breakers for polymer gels/filtercakes; bromine is a well known oxidizer. An example of prior art on these points is Murphey which teaches the use of bromine to oxidize/degrade a polysaccharide filter cake in a borehole (see Abstract); xanthan is a preferred polysaccharide here (see column 5, lines 24-25).

From these teachings, one of ordinary skill in the art would have been motivated to combine or otherwise contact the compositions of Yang with fracturing fluids, especially xanthan and guar containing fracturing fluids, for the purpose of providing protection against bacterial degradation or gel breaking. Even if the contact was for the purpose of biocidal action, there would be sufficient concentration of bromine to break down the polysaccharide enough to cause at least some reduction in fracturing fluid viscosity which is the most the rejected claims require.

As to claims 12, 23 and 35, Yang does not specifically disclose use of the claimed nitrogen to bromine ratio, but as seen above, this is taught in Moore. The compositions of Moore are very similar to those of Yang and are taught for use in the same manner (see above). Thus, it would have been obvious to one of ordinary skill in the art to utilize this ratio accordingly in the compositions of Yang.

As to claims 14-15, such treatment limitations are all well known in the art and would have been obvious to one of ordinary skill in the art to apply here, rendering

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these claims obvious. As to claims 16 and 37, one of ordinary skill in the art would have been motivated to perform routine optimization on the amount of active bromine in the fracturing fluid (for biocidal and/or degradative activity) and would have made some compositions in the scope of this claim in the process.

Double Patenting

11. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

12. Claims 3-12, 16-23 and 26-35 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 4-6, 18-21, 23-25, 36-38, 41-43, 46-49 and 51-54 of copending Application No. 10/138,664. Although the conflicting claims are not identical, they are not patentably distinct from each other. The claims of the reference application are the same as the

rejected claims, except those of the reference are directed to biocidal compositions and methods, while the rejected claims are directed to viscosity reducing compositions and methods. Following reasoning similar to that applied in rejections above, this difference is not significant as the biocides are strong enough oxidizers to provide some degree of viscosity reduction even at the usual levels used for biocidal activity. The rejected claims would have then been effectively obvious to one of ordinary skill in the art.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

13. Claims 24-34 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-41 of copending Application No. 10/327,563. Although the conflicting claims are not identical, they are not patentably distinct from each other. The claims of the reference application recite basically the same compositions as the rejected claims, but those of the reference recite biocidally effective amounts, while the rejected claims recite viscosity reducing amounts. Following reasoning similar to that applied in rejections above, this difference is not significant as the biocides are strong enough oxidizers to provide some degree of viscosity reduction even at the usual levels used for biocidal activity. The rejected claims would have then been effectively obvious to one of ordinary skill in the art.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure: US Patents 6,270,722; 6,299,909; 6,306,441; 6,322,822; 6,375,991; and US Patent Application Publications 2003/0104074; 2004/0120853; and 2005/0147696.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to C. R. Richard whose telephone number is 571-272-8502. The examiner can normally be reached on M-Th, 8am-6pm and alternate Fridays, 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on 571-272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CR Richard

Philip Tucker
PHILIP TUCKER
PRIMARY EXAMINER
ART UNIT 1712